

**REMARKS**

In the Office Action dated January 13, 2005, the Examiner has rejected claims 1 – 7, 12 – 14, and 17 – 18 under 35 U.S.C. §102(b) and rejected claims 1, 2, and 7 – 11, 15, and 16 under 35 U.S.C. §103(a). Favorable reconsideration of the subject application is respectfully requested in view of the following remarks.

Briefly, claims 1, 2, and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,295,861 to Tom et al., and claims 1, 2, and 7 – 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,321,588 (Bowers et al.) in view of U.S. Patent No. 6,684,683 (Potyrailo et al.). The Examiner takes the position that the Tom et al. and Bowers et al. patents disclose sensors comprising resonating structures having a resonant frequency dependent upon an acoustic characteristic of a gas. Specifically, the Examiner argues that (1) since the resonant frequency of the Tom et al. and Bowers et al. sensors are dependent on the weight of the adsorbed gas, (2) since the weight of the adsorbed gas is dependent on the molecular mass and density of the ambient gas, and (3) since the speed of sound of gas is dependent on the molecular mass and density of a gas, that the Tom et al. and Bowers et al. sensors are, in fact, measuring different acoustic characteristics because gases having different acoustic properties will cause different sensor signals. The proffered analysis is not reasonable since it ignores the distinction between and advantages of a direct measurement of an acoustic property of a gas compared to indirect measurements of an acoustic property correlated via adsorption.

As an initial matter, the arguments made in prior communications are incorporated by reference. As stated previously, the sensors of Tom et al. and Bowers et al. operate via adsorption and, as such, do not measure an acoustic characteristic of the gas. That is, the measurement provided by these adsorption sensors are not the result of a measurement of an acoustic characteristic—the sensors merely measure the weight of a component *in contact* with (i.e., adsorbed by) the sensor, and do not *directly measure* an acoustic characteristic (e.g., velocity of sound) of the gas *surrounding* the sensor. While there may be some tangential

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correlation between the chemical and acoustic properties of a gas, it is clear from the description that the present invention does not make use of adsorption and thus differs from the sensors of the Tom et al. and Bowers et al. patents. Consequently, it is respectfully requested the rejections over Tom et al. and Bowers et al. be withdrawn.

Claims 1 – 5 and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 2,952,153 (Robinson), claims 1 – 6 and 12 – 14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,255,964 (Morison), claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,255,964 (Morison) in view of GB Patent No. 2,288,660 (Fischer), and claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,255,964 (Morison) in view of the article entitled “New CO<sub>2</sub> Sensor with Fast Resolution and Fast Response” (Granstedt). With regard to the rejections over Robinson & Morison, the examiner argues the phrase “micromachined sensor” converts the claims into product by process claims and that, since no limitation as to a different structure resulting from micromachining is set forth in claims, the claims do not patentably distinguish the invention over the prior art.

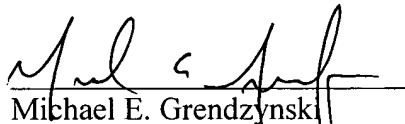
This rejection is respectfully traversed. As an initial matter, the arguments made in prior communications are incorporated by reference. In addition, the claims at issue are not product by process claims. A product-by-process claim is a product claim that defines the claimed product in terms of the process by which it is made (e.g., compounds X prepared by a process Y”). The claims at issue do not define steps by which a product is being formed (e.g., a sensor formed by particular micromachining steps); rather, the claim defines a particular class of product (a micromachined sensor). Morison and Robinson do not disclose subject matter relating to the physical dimensions, related tolerances, or the choice of materials and methods used in the formation of a micromachined sensor. Instead, Morison and Robinson disclose structures that are large and complex, being made from materials not easily processed. It would require significant experimentation to transform the structures of Morison and Robinson into a micromachined sensor that can be produced in large quantities and at low cost. Therefore, it is

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requested that the rejections of claims 1-7, and 12 – 15 over Morison and Robinson be withdrawn.

In view of the foregoing, Applicants respectfully request the Examiner to find the application to be in condition for allowance with claims 1 – 7 and 9 – 16. However, if for any reason the Examiner feels that the application is not now in condition for allowance, he is respectfully requested to call the undersigned attorney to discuss any unresolved issues and to expedite the disposition of the application.

Respectfully submitted,

  
Michael E. Grendzynski  
Registration No. 54,790

EDELL, SHAPIRO & FINNAN, LLC  
1901 Research Boulevard, Suite 400  
Rockville, Maryland 20850-3164  
(301) 424-3640

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